July, 1957

THE CHEMIST

VOLUME XXXIV NUMBER 7

Dr. Milton Harris, F.A.I.C.
Receives Washington AIC Chapter Scroll
(*See Page* 269)

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Deadlines for *The Chemist*

Copy for the September issue of The Chemist should be in our hands before August 10th. Advertising copy for September should be received not later than August 15th.

THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in THE CHEMIST.

AIC Members are urged to read thoughtfully, "Suggestions for the Future" (page 263). Your comments will be welcome.

IN THIS ISSUE

Special AIC Announcements:
New Officers for Pennsylvania, New Jersey, Niagara, and New York Chapters 262
Editorial:
Suggestions for the Future, John H. Nair, F.A.I.C. 263
The Place of the Chemist in the World, Dr. Milton Harris, F.A.I.C. 269
Milton Harris, Dr. Walter J. Murphy, Hon. AIC 271
Presentation to Milton Harris 274
The Chemist in Management, Dr. Wayne E. Kuhn, F.A.I.C. 275
Communications:
Reference to Classification of Chemists 283
Subservience? 283
Chemist File Available 284
Correct Title 284
Council 285
AIC Activities:
New Jersey Chapter, Committee on Science Education 285
New York Chapter, Summer Employment Program 286
Washington Chapter, Study Groups Organized 286
Baltimore Chapter, Chemistry and Sudden Death 286
Louisiana Chapter, Technical Man in the Industry 287
Opportunities 288
For Your Library 288

TO COME IN AUGUST

Another of the excellent papers presented at the 34th Annual AIC Meeting in Akron, Ohio, is available. It is a provocative discourse on, "The Destructive Side of Creativity," by Herbert A. Shepard, assistant professor of sociology, Massachusetts Institute of Technology.

The AIC Committee on Manpower reports significant facts about the employment situation facing chemists-over-forty, if they seek positions. Areas which need study are indicated.

The New Jersey Chapter awarded three Honor Scrolls in recognition of an extraordinary committee accomplishment. The story will be told in the August CHEMIST.

We Recommend for Your Needs

Baker & Adamson Division ..... Inside Front Cover
Bios Laboratories 268
Busher Employment Agency 288
Food Research Laboratories 282
The Lento Press 290
Arthur D. Little, Inc. 290
Molnar Laboratories 262
Phoenix Chemical Laboratories 281
Robinette Research Laboratories 283
Foster D. Snell, Inc. 289
R. Steckler Laboratories 287
Arthur H. Thomas Co. 259
Truesdail Laboratories 280
U. S. Stoneware ..... Outside Back Cover

Special AIC Announcements

New Officers for Pennsylvania Chapter

The Pennsylvania Chapter has elected the following officers for the fiscal year 1957-58:

Chairman: Marcus Sittenfield, 7903 Gilbert St., Philadelphia 19, Pa.

Secretary, Dr. Tony M. Immediata, International Resistance Co., 401 No. Broad St., Philadelphia 8, Pa.

Treasurer, John H. Staub, Barrett Division, Allied Chemical & Dye Corp., Margaret & Bermuda Sts., Philadelphia, Pa.

National Council Representative, Hillary Robinette, Jr., Robinette Research Labs., Inc. 16 E. Lancaster Ave., Ardmore, Pa.

New Jersey Chapter Elects

The New Jersey Chapter has elected the following officers for 1957-1958:

Chairman, Dr. W. R. Sullivan, Hoffman-LaRoche, Inc., Nutley 10, N.J.

Chairman-elect, Dr. Lawrence T. Eby, Enjay Co., Inc., Elizabeth, N.J.

Secretary, Dr. John F. Mahoney, Merck & Co., Inc., Rahway, N.J.

Treasurer, Dr. Curt Bamberger, Patent Chemicals, Inc., Paterson, N.J.

National Council Representative, Dr. Max Bender, American Cyanamid Co., Bound Brook, N.J.

Niagara Chapter Officers

The Niagara Chapter announces the following new officers for 1957-1958:

Chairman, Dr. Maurice H. Fleysher, National Aniline Div., Allied Chemical & Dye Corp., Buffalo 5, N.Y.

Chairman-elect, Clarence A. Weltman, Alox Corporation, P.O. Box 556, Niagara Falls, N.Y.

Secretary, Dr. Paul H. Margulies, BECCO Chemical Div., Food Machinery & Chemical Corp., Station B, Buffalo 7, N.Y.

Treasurer, Ray F. Seifert, Titanium Alloy Mfg. Co., National Lead Co., Niagara Falls, N.Y.

National Council Representative, Dr. J. H. Bruun, Hooker Electro-chemical Co., Niagara Falls, N.Y.

New York Chapter Officers

At the Annual Meeting of the New York Chapter, held June 6th, the following new officers were announced for 1957-58:

Chairman, Dr. Ernest I. Becker, Polytechnic Institute of Brooklyn, 99 Livingston St., Brooklyn 1, N.Y.

Chairman-elect, George Foy, Fine Chemicals Division, Shulton, Inc., Clifton, N.J.

Treasurer, Shepherd Stigman, G. M. Basford Co., 60 E. 42nd St., New York 17, N.Y.

Secretary, Dr. Kurt S. Konigsbacher, Evans Research & Development Corp., 250 E. 43rd St., New York 17, N.Y.

National Council Representative, Dr. Murray Berdick, Evans Research & Development Corp., 250 E. 43rd St., New York 17, N.Y.

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EDITORIAL

Suggestions for the Future

John H. Nair, F.A.I.C.

Retiring President of The American Institute of Chemists, Inc.

(The President's Address before the Institute Luncheon, held May 24, 1957, during the 34th Annual AIC Meeting, at Akron, Ohio.)

IT seems reasonable that out of observations made and experiences undergone during a two-year term as president-elect and president of the AIC should come some reflections worthy of utterance. Whether these ideas might contain worthwhile suggestions for the future may well be a matter of individual opinions.

It has been my privilege, while president, to visit all of the local chapters and to be present at the chartering of a new one. This has afforded an opportunity to meet a much more widely dispersed group of members than an AIC president would normally come in contact with while in office. These visits have been one of the most enjoyable aspects of my tenure. I have been able to learn at firsthand the degree of activity or inactivity characterizing each group. I have been told about projects under way, accomplishments which have been realized, and hopes for the future programs of the several local chapters. Many questions have been posed to me concerning policies and programs of the national body. Some I could answer, but others dealt with matters not yet crystallized into specific form.

Out of my observations and experiences while visiting with the local chapters, as well as from long service on the National Council, have developed some rather definite suggestions concerning a program which might well be considered by the INSTITUTE. One of the most frequent comments made to me was that the AIC seemed to be largely a group of Eastern Seaboard scientists and engineers. There was little feeling of identification throughout the country on the part of local members with a body of national scope, and little understanding concerning the program of the INSTITUTE at large. This was somewhat understandable when I learned that at least two chapters had not received a visit by a National officer during the past fifteen years. Only occasionally could representatives of many chapters be present at a Council Meeting. In consequence, a severe breakdown in channels of communication was inevitable, with consequent loss of interest. Adding further to this feeling of isolation was the fact that national meetings have been held in Chicago or on the Eastern Seaboard for a number of years.

In resolving this situation, two or three steps are possible. In the first place, there should be general recognition that acceptance of nomination to the office of president-elect carries with it an obligation, if elected, to visit every chapter during the ensuing two years. If the incumbent is not in such a position as would lead his company to subsidize the expense of travel for such visits, provisions should be made in our annual budget to defray the cost. It is highly important that our president have a finger on the pulse of activity in the local chapters through having made personal visits to them within recent months.

The problem of national meeting sites and their rotation to various areas is being met, in part, by holding our first West Coast annual affair in the city of Los Angeles, during April, 1958. Such dispersion of meeting sites should be continued as a national policy in the planning of future annual meetings.

A third step which will go a long way toward better meeting the needs of our membership is the organization of additional local chapters. With rapidly growing membership and a constitutional requirement of only ten Fellows to form a local chapter, it should be possible to double the number of local chapters within the next five years. Moves have already been made in San Francisco, Florida, and Louisville, looking to the establishment of a chapter in each of these areas. I suggest we appoint a national committee to deal with local chapter activities and membership affairs. One of its responsibilities might well be this extension of the number of local chapters. A senior scientist, who was formerly a member of the AIC and who has resided in the San Francisco Bay area for the past fifteen years, told me that the reason he resigned was because of inability to take part personally in any meetings of the INSTITUTE. He said if there had been a local chapter in that area where he could enjoy some fellowship and feel that he was making a real contribution to the program of the INSTITUTE, he would have certainly continued his membership. Among our widely dispersed membership there probably are scores more who feel as this man did.

The program of this 34th Annual Meeting is built around the employer-employee relationship. We have a standing committee of the Council which is constantly studying the problems which grow out of this relationship. Its activities in several areas of the country were reported at the meeting. Dr. Strand reported the results of a survey made by his firm as to the attitudes of chemists and engineers toward research and development management. This study covered a fairly small sample from the chemical field. Perhaps this is an area in which the INSTITUTE might do a much broader attitude study. We need more information as to the causes of job dissatisfaction on the

part of chemists and chemical engineers. There is considerable shifting from one company to another in this country in technical positions. Partly this may arise from somewhat undesirable recruitment techniques employed by some managements. Partly it is due to dissatisfaction with the degree of recognition accorded the technical man in his job. Partly it is a matter of inadequate remuneration. There may be other major causes for this shifting of jobs. The INSTITUTE might well pursue a study of the situation on a national scale, confining its first efforts to its own members.

What are we doing to improve the situation of the manpower shortage in chemistry and chemical engineering? Well, several chapters are doing a good job toward developing interest in scientific careers at an early age among high school students. Some of our members take part in the judging of science fairs. Others appear on the rostrum and address student bodies on the opportunities for a career in chemistry and chemical engineering. Many individual members occupy posts in community activities in which they are able to influence young men to follow a scientific career. Considerable effort is being made to provide wider awareness of the need for adequate high school instruction in mathematics and science. Opportunities are being afforded to teachers of high school science to work in industry and industrial laboratories during their summer vacations. It would be difficult to add up all the activities in this direction which are being supported by AIC members, either in collective groups or as individuals. In view of the increasing demand for trained technical people in industry, our INSTITUTE needs to foster more vigorously active efforts to increase our potential supply of chemists and chemical engineers.

At the other end of the age cycle, there apparently exists some surplus of older chemists and chemical engineers who find it difficult to obtain reemployment. It is highly important, in view of our current manpower shortage, that we make the best use possible of this over-age group. In addition we need to recognize that the number of older scientists and engineers is bound to increase in society growing so rapidly in size as ours in America. Here is an area in which the INSTITUTE might well take the lead in developing the facts. We need to know the numbers, both percentage-wise and in total, of such unemployed older scientists, and we need a better understanding of the causes which have led to their unemployment. In these times when the newspaper brings us daily the word of some new merger which has taken place in industry, a certain number of capable and experienced chemists and chemical engineers will inevitably suffer separation from their existing jobs through no fault of their own.

Yet in the business atmosphere which exists today, the man who is no older than thirty-five frequently finds trouble in obtaining satisfactory reemployment. The trend toward a broader scale of pension schemes, which is often alleged to be a bar to employment of older men, is only part of the story. In many companies a distinct policy has developed not to employ men who have obtained their training with other companies. The experience of such concerns has satisfied them that the best method to obtain capable and productive technical personnel is to select the graduates fresh out of school and bring them along within the organization. This is a pattern which has characterized European industry for many years, but has not, in the past, been so prevalent in the States. As a part of this general employment study, the INSTITUTE should pay attention to the policies of companies with regard to retirement. These usually specify a definite terminal date based on age, without regard to physical and mental condition of the individual. Many men are old and should be retired at sixty, having become non-productive and complacent. Other men are still creative at seventy-five and retain excellent physical vigor.

In this area of manpower or employer-employee relationship, the INSTITUTE should ask either of our committees which are concerned with these matters to undertake a determination of the facts. From such a study might come a recommendation as to a program to ameliorate the situation. This is likely to be a matter of education and long-range effort, but it may prove to be a direction in which the INSTITUTE needs to assume leadership.

Tied up with this whole manpower situation is the improvement of our educational picture and the encouragement of young men and women at an early age to take up science or engineering as a career. We all recognize that in most communities at the secondary school level the matter of adequate facilities and sufficiently well-trained teaching staff presents serious problems. Many of us may not be so mindful of the necessity for better professional education at the college level. Our Committee on Professional Education is studying the proposals made by Dr. J C. Warner, Hon. AIC, at the Atlantic City meeting of the American Chemical Society. It has recommended that the AIC undertake to assist in the implementation of Dr. Warner's proposals, through cooperative efforts with other agencies and it has so advised Dr. Warner. This is another long-range program, but one which is greatly needed. Academic faculties are proverbially resistant to change. Many professors view their curricula requirements as sancrosanct. There will be tremendous inertia to overcome in any movement aimed toward modifying the content of the

courses designed for scientific education. The chemical engineers worked on this problem for a dozen years but eventually were successful. We might anticipate a similar lapse of time before changes in the chemical curricula of colleges and universities can be effected, even with persistant and widespread support of efforts to do so. This should be an integral part of the program of activities of the INSTITUTE in the years ahead.

At times we receive complaints of lack of activity or accomplishment by the AIC in directions in which the individual member feels the organization should be active. Frequently these comments come from members who do not participate in any activity of the INSTITUTE, either because of their distance from a local chapter or because of lack of interest. This lack of participation by those who are qualified members limits the usefulness of the INSTITUTE. This situation arises from the failure of members to realize that they each have individual responsibility in working together to achieve the objectives of the INSTITUTE. For example, it has been suggested that THE CHEMIST might serve the interest of our members more effectively if it provided added features and articles on common problems and objectives. When we consider that our hard-working editor has to fit in her activities in this capacity with those of running the national headquarter's office, we can only wonder how she manages to do as effective a job as she does accomplish. At her request, an Advisory Board has been established, composed of nine members, who are willing to give of their time and effort to improving the content of THE CHEMIST. The Council authorized the Board, and this was approved at the Annual Meeting. Board membership will be rotated on a three-year service basis.

Another suggestion, made for improving the status of all of us as chemists, is to set up a scheme for certification such as that which operates in England under the aegis of the Royal Institute of Chemistry. This depends upon a series of examinations designed to evaluate the qualifications of individual chemists and to classify them on the basis of individual success in passing the examination. The only requirement which we have in the INSTITUTE for the classification of "Fellow" is ten years of progressive experience (following the degree) in the field of chemistry or chemical engineering. Any individual with the training, and the amount and kind of experience stipulated is entitled to be accorded Fellowship status. There has been some expression of opinion that some more rigid standardization mechanism might be desirable to distinguish between experienced chemists and chemical engineers and those who are really scientists and engineers of distinction. This is a very difficult matter to resolve, and I am

not prepared to make suggestions as to its general desirability. The INSTITUTE might well give some study to this aspect of professional standing.

I have greatly enjoyed the privilege of serving the INSTITUTE as president, and to those who might be asked to consider the office in later years, I can highly recommend it as a rich and rewarding experience.

Announced: By Dr. Eric J. Hewitt, F.A.I.C., vice president of Evans Research & Development Corp., New York 17, N.Y., the establishment of a new research group for studies in enzymology.

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Announced: By R. E. Horsey, F.A.I.C., vice president in charge of sales of Givaudan-Delawanna, Inc., New York 36, N.Y., that Ben S. Cottle, Jr., has been appointed to the sales staff, and will represent the company and its associates in the northern New Jersey area.

Appointed: Dr. Lloyd A. Hall, F.A.I.C., for three years, as a member of the Advisory Board of *Chemical & Engineering News*. In January, he spoke on "Some Considerations on Preservatives and Food Additives," before a combined meeting of the Toronto Sections of the Canadian Food Technologists Association and the American Association of Cereal Chemists, in Toronto.

The Place of the Chemist in the World

Dr. Milton Harris, F.A.I.C.

Director of Research, The Gillette Co., 1246 Taylor St., N.W., Washington 11, D.C.

(Presented when the author received the Honor Scroll of the Washington AIC Chapter, April 23, 1957, in Washington, D.C.)

MY subject represents the very heart of THE AMERICAN INSTITUTE OF CHEMISTS. It is the place of the chemist in the technological world as well as in the world in general.

At all times in history, people have asked what the world would be like ten, fifty, or one-hundred years hence. But the rate at which new concepts, new processes and new products are being developed makes this question more exciting and vital today. Everything now indicates that we are on the verge of a new age of expansion. Much of this is the result of the efforts of you and your colleagues in research and technology. Economic surveys indicate a national production of 500-billion dollars in ten years with future markets for both consumer and capital goods, unparalleled in history. And yet those of us who work in the field of science must ask ourselves whether we are prepared to share in this growth.

More specifically, over the years there have been numerous complaints, from almost every quarter concerned with science, whether it be industry or institution, government or university, that the efforts of those of us concerned with research are not appreciated or understood. This has been especially true in industry. In many cases (excluding normal griping) this lack of appreciation may be true. I have seen top industrial leaders who have thrilled at the thought of what the future automobile or airplane will be like, who exhibit amazement at the progress of research in electronic fields, who have absolute faith that research will cure all diseases, but who are left cold in a discussion of research in their own companies or institutions.

This is indeed a paradoxical situation, since never has research activity been so high nor received such great support. Furthermore, we must recognize that the above-mentioned leaders are truly "research-minded" in a broad sense. Then, why this apparent lack of interest and enthusiasm for something that so vitally affects every individual, our nation, and the world, when it is specifically applied to their own particular areas of interest?

A complete answer is undoubtedly a complex one, but there are certain features which can be simplified. Perhaps the most important is the lack of detailed knowledge of how research works or how it can be applied. Here are a few specific factors which have contributed to such misunderstandings:

Too often science is pictured as an "ivory-tower" affair and as completely unrealistic. True, there is "ivory-tower research," and in the right place it is an extremely important type of research. If anything, there may be some question as to whether we are actually doing enough of it. But a quick glance at our industrial growth, stemming from research, leaves little doubt as to the truly realistic nature of most industrial research.

Additional bewilderment has been created by arguments, which frequently become trite, on differences between basic and applied research. In point of fact and in many cases, they may be the same, or at most differ in time of application.

Another great difficulty is that it is not always easy to explain exactly what the research program will accomplish, with the same degree of precision as is frequently possible in the fields of production or sales. It is recognized that research must ultimately prove its worth, and the highest aims of industrial research are in the creation of new products and new processes. But who is qualified to estimate the cash value of every discovery?

Still another contributing factor has been the failure to recognize the importance of the time angle. Many scientists tend to be too complacent about their work; management generally too impatient. There is a story about two partners who decided to employ a research chemist. About 11 a.m. of the first day he was employed, one partner said, "Shall we go see whether the research chap has discovered anything?" "No," replied his partner, "We must show patience; let's wait until after lunch."

But above all, the major factor contributing to misunderstandings between managers and technologists or scientists has been the failure on the part of both to recognize their respective responsibilities. The technologist seems unwilling to assume the responsibility of leadership in helping to map the technical paths of the organization with which he is connected; at the same time, management frequently fails to make those responsible for research a part of its policy-making groups.

We as technical people do not help our cause by simply saying the managers do not understand research. This may be true in many cases but it is equally true that just as frequently we do not understand or attempt to understand our managers. My plea is that we make better attempts to try to understand our managers and recognize their great and complex responsibilities. Modern management must be concerned with an enormous spectrum of problems ranging from sales, production, labor relations, complicated financial organization, to research and many other areas important to the modern

organization.

Perhaps not one of these is as difficult to understand or as intangible as the research area. If we learn to recognize this; if we learn to recognize the need for doing a better job of understanding the relationship of our efforts to those of other operating areas of business, government, university, or any institution connected with such activities; if we offer the same sympathy and understanding of these areas that we expect in our own field; there will be no difficulty in answering questions dealing with the place of the scientist or technologist in the future growth and development of our country.

Milton Harris

Dr. Walter J. Murphy, Hon. AIC

Editorial Director, ACS Applied Publications, 1155 *Sixteenth St., N.W., Washington* 6, *D.C.*

(Presented when Dr. Harris received the Honor Scroll of the Washington AIC Chapter, April 23, 1957.)

DURING the presidency of Lawrence H. Flett, the program of presenting AIC Honor Scrolls to outstanding chemists was initiated. Recently, Mr. Flett received Honorary AIC Membership. In commenting on his contributions to the profession, James M. Crowe, executive editor of the American Chemical Society applied journals, referred to him as "the chemist's chemist." This same description aptly fits Milton Harris. His scientific and technological discoveries and inventions are numerous and well-known, but he has not lived in an ivory tower. Extremely busy building up the Harris Laboratories, he has never refused a request to help any project that had for its objective better remuneration and professional status for chemists and chemical engineers.

The story of Milton Harris is a saga of success of an individual with a burning desire to be an entrepreneur. He was born in Los Angeles, Calif., on March 21, 1906. He received the B.Sc degree in chemistry from Oregon State College in 1926, and then continued his education by taking special courses in organic chemistry at the University of Washington.

If Dr. Harris had followed the advice of Horace Greeley, he probably would have spent the rest of his life paddling around the Pacific Ocean or developing new chemicals in Manila or Hong Kong. He placed the Greeley advice in reverse and entered Yale University, where he received the Ph.D. degree in 1929.

His graduate work was in the field of protein chemistry, and from there he proceeded to industrial research for Cheney Brothers Silk Mills at

South Manchester, Conn. In 1931 he became a research associate for the American Association of Textile Chemists and Colorists at the National Bureau of Standards in Washington, where he worked on fundamental researches on the chemical and physical properties of textile fibers and fabrics. In 1939 he became director of research for the Textile Foundation and, beginning in 1941, simultaneously held the position of director of research for the Textile Research Institute.

At the end of 1944, he resigned both positions to organize the Harris Research Laboratories in Washington. From modest beginnings, this organization has grown phenomenally in a little over a decade. Recently he sold the Harris Research Laboratories to the Gillette Company, one of its principal clients. Dr. Harris continues to direct the Harris Laboratories with the title of president. In 1956, he was also appointed director of research of the Gillette Company and its subsidiaries. Thus within the past year, the horizon of his activities has again widened tremendously with many new, interesting challenges.

Dr. Harris' intense desire to be of service to his fellowman, along with his widely recognized broad scientific background and training, has led to his appointment to many committees.

During the war he acted as a member of the Advisory Board and consultant to the Office of the Quartermaster General; chairman of the Committee on Textiles and Cordage of the Army-Navy NDRC Tropical Deterioration Project; secretary, Committee on Clothing of the National Research Council; member of the Subcommittee on Wood and Plastics for the National Advisory Committee for Aeronautics; chairman of the Wool Conservation Board; and member of the Panel on Clothing of the Research and Development Board. I suspect strongly that if it had not been for his imaginative mind, many of us during World War II would have been dressed like South Sea Islanders. Any one of these assignments constituted a terrific drain on Milton Harris' time. Only a man with his uncanny ability to proportion his available time efficiently could possibly have accomplished so much for his country's war effort and still continue to direct the activities of his own organization.

Currently he is a trustee of the Textile Research Institute and the Philadelphia Textile Institute; member of the Committee on Degradation of the National Research Council; and a member of the Subcommittee of the Food and Agricultural Organization of the United Nations.

Many honors have been bestowed on Milton Harris. In 1943, he received the Award of the Washington Academy of Sciences; in 1945, the Olney Medal for research in the field of Textile Chemistry; and in 1955, the honorary degree of Doctor of

Textile Science from the Philadelphia Textile Institute.

It is but natural that most of my contacts with Dr. Harris have been in connection with his many services performed for both the American Chemical Society and THE AMERICAN INSTITUTE OF CHEMISTS. In 1947, he was chairman of the ACS Cellulose Division. He is a section editor on Dyes & Textile Chemistry for *Chemical Abstracts*. In 1949-1951, he served as chairman of the Society's Committee on National Meetings and Divisional Activities. It was my privilege to appoint him as a member of the Advisory Board for the Advances in Chemistry Series. This relatively new project of the Society has benefited greatly by Dr. Harris' membership on the board. At its first meeting it was quickly discernible how well he mixed scientific knowledge with business acumen. One other outstanding characteristic frequently was in evidence, namely, the ability to bring together divergent opinions and to develop from them constructive ideas.

Milton Harris has long been a member of the Advisory Committee to the National Bureau of Standards. He was chairman of the Washington Chapter of THE AMERICAN INSTITUTE OF CHEMISTS in 1953. He has been chairman of the Washington Section of the American Association of Textile Chemists and Colorists.

These, in brief summary, are the outstanding accomplishments of a chemist just turned fifty, but one who looks much more youthful and still is an excellent golfer and tennis player.

I have yet to portray the warm friendly feeling that Milton Harris has for all of his associates in the chemical profession. He is an expert in arm twisting. His success, however, in this direction is not hard to understand. He never says no to anything that he is asked to do that will help his fellow chemists to improve their professional and economic status. Again and again I have called on him for special services to ACS publications. Not once has he refused. I frequently refer to him as the perfect example of what I consider to be the ideal professional man.

It is my lot not only to meet those who are renowned and highly successful in the chemical profession and industry, but also to deal with many who, for one reason or another, are struggling for recognition. Invariably such individuals will blame everybody but themselves for their plight, although in most instances their personality is the block. It is convincing in many instances to point out the successful career of Milton Harris —one built entirely on his ability, initiative, and farsightedness. Because of his innate modesty, he does not realize that he has been a great inspiration to other members of the profession.

Still a young man in years, and still much younger in vigor and spirit, it is a safe prediction that the years

ahead will bring even greater honors to Milton Harris. Of one thing we can be certain, further success will never change his basic characteristics. His lovable nature and his fervent desire to serve mankind, particularly those with whom he is associated professionally, will remain unaltered.

Presentation To Milton Harris

The Honor Scroll of the Washington Chapter of THE AMERICAN INSTITUTE OF CHEMISTS was presented to Dr. Milton Harris, F.A.I.C., director of research for The Gillette Company, 1246 Taylor St., N.W., Washington 11, D.C., at a dinner held at the Windsor Park Hotel, Washington, D.C., April 23, 1957. A "Fellowship Hour" for those attending the dinner was sponsored by Dr. Alfred E. Brown, director of research of the Harris Laboratories.

The chairman of the Chapter, Wesley R. Koster, served as master of ceremonies. AIC President John H. Nair brought greetings from the national organization. Dr. Walter J. Murphy, Hon. AIC, editorial director of the Applied Journals of the American Chemical Society, introduced Dr. Harris, who accepted the award with a talk on "The Place of the Chemist in the World." (See preceding pages.)

—C&EN

Left to Right: Dr. Harris, Wesley R. Koster and John H. Nair.

The citation to Dr. Harris reads:

For service in advancing the professional status of chemistry and for leadership in research in the chemistry of textiles and high polymers.

The Chemical Industry: Will spend an estimated $2.5 billion on new domestic chemical construction through 1957-1958, according to a survey made by the Manufacturing Chemists' Association, Inc., 1625 Eye St., N.W., Washington 6, D.C.

Appointed: Bruce M. Bare, F.A.I.C., as marketing manager of the Chemicals Division of Atlas Powder Co., Wilmington 99, Del. He was recently with Dewey & Almy Chemical Co.

The Chemist in Management

(A New Era in Professional Opportunity)

Dr. Wayne E. Kuhn, F.A.I.C.

General Manager, Research and Technical Department, The Texas Co., 135 *E. 42nd St., New York* 17, *N.Y.*

(Presented at the 34th Annual Meeting of The American Institute of Chemists, May 24, 1957, in Akron, Ohio)

WE are in a period of transition for the chemist. His role as a professional in our dynamic industrial society both reflects change and contributes to it. This discussion concerns one critical aspect of the modern chemist's role: his increasing participation in management—a new kind of professional career which is now evolving that takes the chemist into new areas of responsibility and opportunity. I call this evolution of opportunity "the new professionalism."

I will now look at the pitfalls, the potentialities, and the magnitude of the changing professional role of the chemical engineer and the chemist.

This era has been given many labels—too many. So, I will seek out a distinguishing characteristic behind such labels as the "Age of Flight", the "Age of Chemistry", the "Age of Engineering", and so on. These labels all emphasize a superficial truth—these are technology-oriented times. But the bed-rock characteristic of the moment, the one we cope with on all sides today, is the *accelerating rate of change* in technology. Now, this is something quite different from change *per se*.

We have learned in the course of modern history to accommodate change, even when we have resisted it. Institutions have evolved, which have, with relative efficiency, applied and manipulated the advances that grew out of the industrial revolution. But, as we look back, it appears to us that the changes came slowly and were assimilated gradually.

However, in the mid-Twentieth Century the pace quickens almost by the hour. We sometimes find ourselves in a turmoil of acceleration in our efforts to apply new technology. This discussion cannot encompass the broad implications of this increasing momentum in the rate of change. However, by examining within practical limits the chemist's role in interpreting, and creatively guiding, the swift changes of modern technology, we can perhaps make a useful contribution both to the enterprises we serve, and to the future of our profession.

The great changes in science and technology generally come to the corporation via practical industrial research. We are aware of the chemist's and the chemical engineer's role in research. I hope to make plain the evolving role of these scientific individuals as interpreters of science to

management, and ultimately as participants in management.

The chemist has a significant contribution to make, as industrial corporations diversify, modernize, or open up entirely new areas of production. In its capital planning, management depends for correct decisions in the application of funds upon the informed opinions of many experts. The professional judgment of the chemist is of great value to management in determining the most efficient way a corporation can make use of new technology.

In other words, the interpretations of the chemist as a link between research and management are essential in successful management. It is this responsibility — the responsibility of sound professional judgments made within the broad context of business enterprise—that provides the modern chemist the access to his future as a member of corporate management.

This is the perspective from which I view the modern role of the chemist in management; the momentum of technological change is very nearly overwhelming; there is an urgent need in management to provide for the efficient and orderly application of new technology; the chemist as a research man has a vital responsibility to management to order the turmoil of change into some rational procedure for the best utilization of capital funds; beyond that role lies a new career, that of the professional "businessman-chemist". This perspective provides a great challenge to the chemical engineer and the chemist, for it implies the need for continuous self-education beyond the threshhold of graduate and undergraduate education as a chemist. This is the key that will unlock for the chemist the potentialities that lie at the heart of his future as a business professional.

Now, let me do some translating into concrete terms. Do modern business conditions reflect the observations I have generalized upon? Is the role of the chemist actually taking on a larger significance in the decisions and functions of management? Can any of this be measured? The answer to these questions is, emphatically, yes!

The broadening base of technology in the modern corporation is clearly reflected in the following figures:

First: Approximately one in every 60 employes is now technically educated.

Second: Surveys show that more than 40 per cent of management in the technical industries are chemists, physicists, or engineers.

Third: The American Chemical Society's 1955 "Professional And Economic Survey" shows that 16.7 per cent of today's chemists are in technical administration posts.

Fourth: The same survey reveals that 28.4 per cent of our chemical engineers are in technical administration posts.

Fifth: The survey reports that of

technical men in all fields, 20.3 per cent are in technical administration.

This is certainly a wonderful profile of opportunity. The figures indicate that the census of technically educated men in business administration is growing as our society increases its commitment to science.

Knowing the nature of, and basis for, growing opportunities for the chemist in management, the question arises: "How does the individual chemist go about taking advantage of them?" The answer is not a simple one.

Let us start with the young man who is just starting out as a professional chemist or chemical engineer. He has a degree (graduate or undergraduate) which will open certain doors where professional education is required or respected. He can expect certain professional courtesies from his colleagues. He has access to professional societies. But, he is not yet a professional himself.

The degree is a very useful "calling card", but it does not entitle him to professional recognition. There is a change in atmosphere when he steps from academic surroundings to industrial environment. There is often a tendency to assume that academic accomplishments guarantee business advantages. To be specific, some graduates erroneously assume that the academic accomplishment that inheres in a Ph.D. degree is a guarantee of continuous preference in the natural competition for promotion that exists in the business world.

Basically, the recent graduate is a young man who has been specially educated to perform a highly specialized function. Because of this, he has an early decision to make. Will he remain a specialist? This is up to him. At the moment of decision the role of the chemist in management is reduced to its simplest actuality—does the chemist want to manage?

The route to management is by way of successive promotions based on accomplishment and other critical factors. The young chemist, despite his favorable position in an era of rapidly changing technology, cannot expect promotion to management on his academic credentials alone.

Here we come to a central fact. The academic degree is only the beginning of the road. The modern chemist must continuously educate himself as a *business professional* to take advantage of his access to new opportunities. The chemist by learning to understand his work in the broad context of business enterprise can contribute more effectively to the success of his company and to his own personal progress than he will if he sees himself only as a specialist. (I am not referring to the chemist whose unique gifts guide his professional progress along strictly research lines.)

There is a tendency toward overemphasis today on specialization. The persistent concern with increasing

one's technical capacities may be achieved at the sacrifice of education in the broader aspects of the business profession. The chemist with management ambitions must compete with the lawyer, the salesman, the advertising man, the financial man, and others in any large organization who are taught by business experience to think broadly and to "sell" their ideas to management on the basis of over-all business requirements.

The chemist specializes in his education. He starts to work, and he makes some progress in the company he serves. Often this is still specialized work. He may still have a narrow view as to his place in his society. However, he may arrive one day at a point where he is eligible for responsibilities that carry him outside his specialty into the realm of more generalized business administration. Unless he has educated himself to assume executive responsibilities, he may find it is too late to start to measure up to new requirements. He may have overlooked some of his latent skills.

Dr. Clifford F. Rassweiler (F.A.I.C.) recently pointed out that the chemist, and not chemistry, is responsible for progress. The insights of the individual are the backbone of research. However, most industrial research projects today are carried out by groups of individuals, and the young chemist has an excellent opportunity to learn something about the problems of management in efficiently guiding the individual while administering the most effective use of funds for group projects. Thus, from the outset of his career the young chemist is exposed to what are essentially business problems. He should allow his curiosity about these problems to grow.

Beyond the classic disciplines taught in the science classroom there is an exciting area of "new disciplines", the Twentieth Century disciplines of business management, to be explored by the chemist. It takes some adjustment on the part of a young fellow to sense the larger professionalism of business enterprise that includes his own specialty and that of many others. He has to adopt a "sleeves-up" attitude and pitch in to learn about business management both formally, through business literature and evening courses, and informally, through direct observation.

I do not have a syllabus for success to offer the young chemist. But I do have some observations that may be even more useful. Incidentally, while I have emphasized the young man starting out on his professional career, I intend to include chemists who are well into their careers and who wish to direct their efforts toward broader responsibilities.

Management uses a variety of appraisal procedures in evaluating employees. Some are written forms and others are methods of procedure. For our consideration it makes little dif-

ference which is used, because we shall look at a reverse twist of the appraisal procedure. Management rates the individual and his potential. Let us look at what they rate and then ask the chemist to try to place himself in the position of management and to see himself as management observes him in his job.

Let him learn to see where he measures up and where he fails in the eyes of management. In this self-appraisal, the chemist is not to rate himself as he sees himself normally; he must try to establish the rating that management would make of him on the basis of his actual performance *as seen by management*. Again, *not* on the basis of what he thinks he could do if "given the chance."

There are many aspects of appraisal forms. I will confine my consideration to one part only, that section often called "performance potential." This evaluation deals with certain characteristics and abilities which are considered in determining promotion. It might well include the following categories. (The chemist should remember the suggested approach, and decide how management would rate him as to its needs in these categories on basis of observed performance.)

(1) Does he have the ability to apply technical knowledge in the most practical way possible?

It is generally recognized that the basic contribution of the technical man is creative thinking. The transformation of that thinking into practical results is of great interest to management. In executing these results, how effectively does the man make use of the skills and knowledge of others? In other words, how well does he apply all the technical knowledge available to the solution of a problem? The chemist who fully serves his research program is the one who is able to go beyond the limits of his own technical knowledge in seeking the broadest possible solutions. Management is interested in this type of efficiency in creative research. The chemist who aims toward g r e a t e r executive responsibilities should reveal creative initiative plus a practical awareness of his responsibilities in terms of the total effort of the company.

(2) Can the chemist plan and organize work effectively?

Management expects a man to organize his work effectively. That includes the effective direction of others when he is responsible for their work. Efficient programming leads to the best use of time and maximum productivity. Can the man maintain a high level of efficiency by proper delegation of assignments? Is he able to get full cooperation from others? Does he show practical understanding of the fact that an organization chart is based on person to person contact to get a job well done? Management appraises all these factors in rating an individual and will also watch for original contributions in planning and execution. In his planning a man should be ready to move beyond routine precedent, and his planning should anticipate problems.

(3) Is he able to weigh facts and provide a responsible and useful evaluation of a situation?

Accuracy and thoroughness are, of course, paramount in the pursuit of a research objective. However, the situation itself should dictate the degree to which one applies these criteria. Is the man capable of making a judgment which will limit the pro-

gram to suit the realistic situation? Management is not interested in *ad infinitum* research. It seeks the man whose resourcefulness rises above the realistic restrictions on thoroughness and who still provides conclusions that are factual, logical and adequate within the framework of the situation. This man reflects the basic sense of the practical that is fundamental to a professional business point of view.

(4) Is he willing to assume responsibility?

A man can *assume* responsibility, or *accept* it, or both. Mere acceptance is not adequate in the eyes of management. A man should in his willingness to assume responsibility exhibit his own confidence in his initiative and his ability to inspire and influence the group which will assist him. Does he have along with his desire to assume responsibility that quality of behavior known as *leadership?* Management seeks this quality. It is essential to business success.

(5) Is he able to express himself factually and clearly?

Management is much concerned with the profound problem of good communications. Is the chemist able to declare his judgments with precision and with good business perspective, or is he buried within his concerns for research *per se?* Is he able to interpret data understandably and make a pertinent contribution to business decisions? Can he speak the language of management so that management can make good use of his recommendations? In short, does he try to educate himself to learn the cast of mind, the mode of thought, the financial criteria, and the day-to-day business considerations that go into the making of management decisions? Management cannot study data. It needs valid business interpretations in terms of programs, action, and recommendations. One might almost say at this point that the chemist need only employ the basic courtesy of trying to put his work into the other man's terms. A friend of mine once expressed another point of view: If you believe a thing should be understood, then you must accept the responsibility for making it understandable. That surely goes for the man who seeks access to management.

(6) Finally, (although the list could be greatly extended) is the man flexible, dependable, and stable?

Management relies on the technical man. "now more than ever before." It expects to accept his recommendations as sincere and thoughtful judgments. It asks, does the man have the kind of healthy optimism which overrides frustration and keeps him stable as he pursues his objectives? Is he tolerant and patient? These are critical personality factors in one's association with superiors, associates, and subordinates. Management expects a man to be open-minded and to achieve a balanced point of view.

When one considers the possibility of promotion he must realize that it is his management that is rating him and his potential. It is looking for the demonstrated attributes that will indicate that he can ably fulfill greater responsibility. If the man is endeavoring to fulfill only the needs accompanying his present assignment and fails to look beyond, he has no right to be critical or disgruntled about his lack of advancement.

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I cannot provide our young friend starting out as a professional chemist with a syllabus for business success. If he will study the qualities that management usually seeks and do a little soul searching, he should profit. However, he will need to combine his broadening understanding of his role as a specialist in a business enterprise with self-education *as a businessman*. He should then be in a good position to enhance his value to management and to increase his opportunities to participate in management in the future.

The opportunity presents itself to comment about "chemists being a part of top management", a phrase used frequently but in many cases incorrectly and with possible harm to the profession. The chemist or chemical engineer has the confidence of management. He enjoys the receptive ear of management and may well be considered a part of the management team in a broad sense. He is expected to be management-oriented in his thinking. Management makes the decisions, and some of the decisions may be based on his recommendations. In his respect he can be considered a party to the decision. He should be proud of his role.

Management in modern American industry is not based on a democratic method of voting by those on the team, but rather of recommending action to the captain who runs the team. The professional man on this team is expected to be management-oriented in his consideration. He is definitely not a mere tool of management. However, the chemist in his business education must learn that he is not necessarily a part of the final decision making part of management but rather that he is an individual who has the sympathetic ear of management and one on whom management will lean strongly for advice and recommendation. It is important that the chemist or chemical engineer take stock, evaluate his status and his desires, and determine whether he is a professional member of a management group or a member of a large technically trained labor force relying on size for effectiveness. One may have a rude awakening from trying to dream collectively.

The professional chemist should be ever mindful of The American Institute of Chemists' code which is made up of ethical principles. The code states that his responsibilities are many, varying from conscientiously performing the professional assignments entrusted to him to the recognition of his obligation and relation-

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ship to his fellow man. He has an obligation to *contribute* to our way of life in a free enterprise type of economy and not solely to *benefit* from it. In considering promotional possibilities, management is ever alert to this basic attitude. It is usually reflected in the individual's performance.

In summary:

We are living in a time of an accelerating rate of change in technology—a time of great opportunity for the chemist.

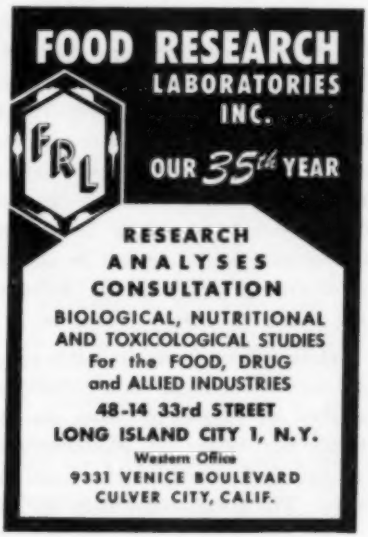
Statistics show that already the technical man is assuming a larger responsibility in management.

The chemist can avail himself of the new opportunities by determining upon a path of personal progress based on self-education as a business professional.

The man whose intellectual curiosity carries him past the threshhold of his academic education in his specialty will stand to gain greatly in this era of swift change. As he consistently enlarges his knowledge of the functions of business, and its management and financing, he is moving forward into that area I described as "the new professionalism".

Prestige in a profession or in a business enterprise must be *earned*. It cannot be legislated or automatically acquired because of a professional degree or an affiliation. The technical man must not lose his identity as a professional individual nor should he place his professional status in the hands of others. Each individual must prove his own ability and establish his integrity—this alone will bring him recognition and promotion. He himself will become one of the new professionals, the men whose solid practical business education, combined with their basic science education, will enable them to shape the critical management decisions that will blueprint a dynamic America tomorrow.

Contributor: Dr. John R. Bowman, F.A.I.C., of Mellon Institute, Pittsburgh, Pa., to the Air Research & Development Command symposium on "the Use of Computers in Medicine," held at Argonne Cancer Research Hospital, University of Chicago, Illinois.



Communications

Reference to Classification of Chemists

To the Editor:

Several months ago there appeared, in THE CHEMIST, an article describing the various classifications of chemists and chemical engineers in the Chicago area. I would appreciate if you would send me another copy. We need it for the proper classification of our chemists.

—O. T. Aepli, F.A.I.C.
Wyandotte, Michigan

Editor's Note: This article, entitled, "Summary Report on Chemical Profession Title Survey for the Chicago Area," appears in the January, 1957, issue of THE CHEMIST.

Subservience?

To the Editor:

In the review of Mr. W. H. Whyte's book, "The Organization Man," *Chemical & Engineering News*, Feb. 18, 1957, page 138, appears the statement:

> "Each of these as well as others easily recognizable is blood brother to the business trainee off to join the large chemical corporation, and each is an organization man in the sense that he has acknowledged his subservience to the organization and is busily building an ideology to shore up this subservience."

The question arises: Is the failure to regard the employee chemist as a professional due to this subservience to the chemical corporation?

The juridical law of Master and Servant states:

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> "The relation of Master and Servant exists where one person, for pay or other valuable consideration, enters into the service of another and devotes to him his personal labor for an agreed period."
>
> —*Black's Law Dictionary*
> 3rd edition, p. 1167
> West Publishing Company

Clearly the employee chemist is a servant of his master, generally a corporation. Accordingly the inventions of the research chemist automatically become the personal property of his master. After all a research chemist is paid to invent.

But more than this, a chemist has a plurality of bosses. On the apex of the pyramid is the intangible boss known as the corporation. By law a corporation is a being. Obviously a non-human being. It can hire and fire chemists just as a human being can.

Beneath the corporation non-human boss is a living boss at the top management level, and below him the director of research, who in turn bosses the section heads, who in turn boss the chemists.

Could this ladder structure of bosses be the cause for the feeling of subservience?

—Name withheld on request.

Chemist File Available

To the Secretary:

Do you know of a public or organization library that would like to receive all copies of THE CHEMIST, dated September 1953 to April 1957 inclusive? All copies are in excellent condition, and will be furnished without charge, except transportation, if requested.

—Burleigh Reed, F.A.I.C.
Box 465, Topeka, Kansas

Correct Title

To the Secretary:

In the December issue of THE CHEMIST, page 477, my name is listed as a newly-elected Fellow, with the title of Group Leader. I am *Senior Chemist,* Research and Engineering Division, Air Reduction Co., Inc., Murray Hill, N.J.

—Dr. Arthur E. Brown, F.A.I.C.

New Plant: To be constructed by Standard Oil Company (Indiana) at Seymour, Ind., for the manufacture of jet aircraft engine starter cartridges. Joseph K. Roberts, F.A.I.C., research and development vice president, said the cartridge was developed by the company's research staffs at Whiting and Seymour.

Appointed: As supervisors of new sales regions for Archer-Daniels-Midland of Minneapolis 2, Minn., Clyde C. West, F.A.I.C., for Los Angeles, and Gale Smith, F.A.I.C., for Cleveland, Ohio.

Graduate Research Fellowships: Available at Tuskegee Institute, Alabama. For information: The Director, The Carver Foundation, Box 188, Tuskegee Institute, Alabama.

Position: For Bruce S. Fisher, A.A.I.C., who has just completed his organic chemistry Ph.D. program at MIT, and is now research chemist with the DuPont elastomer chemicals Department at Jackson Laboratory.

Announced: By Dr. Charles Allen Thomas, Hon. AIC, president of Monsanto Chemical Co., St. Louis 4, Mo., the appointment of Elliott W. Atkinson as assistant to the president to handle special projects. Mr. Atkinson, who is vice president-treasurer of the Lion Oil Company Division of Monsanto, assumed his new duties June first.

Appointed: Dr. William E. Cass, F.A.I.C., to the staff of Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass. He was formerly with General Electric Co. He is chairman of the 1957 Polymer conference of the Gordon Research Conferences.

Change of Name: Pilot Chemical Company to Pilot California Company, 215 West 7th St., Los Angeles 14, Calif. John Morrisroe, F.A.I.C., is president and general manager.

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AIC Activities

New Jersey Chapter

Committee on Science Education

The New Jersey Chapter recently established a "Committee on Science Education at the High School Level," with Clifford L. Ayers as chairman. In an open letter to the Chapter membership, Mr. Ayers stated, in part:

"A real opportunity for Committee experience develöped, in that the Board of Education in Montclair, N.J., recently established a Citizens Committee to review the local high school from the standpoint of building needs, curriculum, finances, school population, etc. We have worked closely with this Committee in reviewing the Science and Mathematics courses offered, and will expect, subsequently, to offer our suggestions with regard to Science teaching facilities. This has been a rewarding experience, and I would urge each member to offer his services to his local School Board in an advisory way, thus helping both the Science teachers and the students.

"We have had repeated requests for qualified speakers to talk to the Science classes in various high schools. This will require less than one hour of the speaker's time on the day scheduled for the talk . . . may I have your suggestions as to

individuals known to you that would be willing to give an inspiring talk to Science students.

"There is an obvious need for summer jobs for both Science teachers and outstanding senior high school Science students. Your Committee stands ready to act as a clearing house in placing Science teachers in those jobs which are made available . . . Please indicate the person to be contacted with regard to a summer job for either a teacher or a student. Students must be over 16, and have "working papers", which the student provides at the time he is hired.

"Please bear in mind that the Committee itself is limited in the number of companies it can contact regarding summer employment opportunities. Without the help of the individual members of the Chapter, no really worth-while accomplishment can be expected. Won't you check your employer, and let us hear from you promptly.

"I would like to have a Chapter member serve on our Committee who is presently living in the Camden area. This would give the Committee an opportunity to cover a larger portion of the State. Any suggesions a member cares to make, or any volunteers, will be gratefully received."

New York Chapter

Summer Employment Program

The New York Chapter announces that it will again carry on a summer employment program. Chemistry majors who have completed two or more years of chemistry in the city's twenty-five colleges and universities, and who wish to work as chemists in summer programs, are invited to file an application with Dr. Lewis R. Fibel, F.A.I.C., at the Department of Chemistry of New York City Community College at 300 Pearl St., Brooklyn 1, N.Y. Employers will contact the students through the office.

Dr. Fibel says that the program will be valuable in two ways. First, the student will be able to gain experience in the practical application of chemistry which can motivate his future studies, help him choose his specific vocation, as well as provide financial assistance. Second, the summer employer will be able to cultivate future employees and exert some influence in the training of these employees. The program also will encourage students to elect science, as well as obtain the services of the students for cooperating organizations.

It is suggested that each laboratory or plant plan to take on at least one summer student.

The Chapter is preparing a "Guide to Young Chemists" which will list suggestions for preparing for a career in chemistry, explain the many branches of chemistry and give tips about seeking employment. Publication is scheduled for the Fall of 1957.

Washington Chapter

Study Groups Organized

The regular "second Tuesday of the month" luncheon meeting of the Washington Chapter was held in April at O'Donnell's Sea Grill. The session was devoted to organization of special study groups designed to pursue some of the principal subjects which concern professional chemists today. Groups established included one for each of the following: Unionism. Licensing of Chemists and Chemical Engineers. Education and Academic Curricula. Technical Competence and Standards. Publications. Employer-Employee Relations. Legislation. Guidance to Young Chemists. Awards. Members are encouraged to join any of these study groups, by contacting the Secretary, Fred S. Magnusson.

Baltimore Chapter

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Dr. Albin H. Warth

Chemistry and Sudden Death

The Baltimore Chapter met March 14th at the Hopkins Apartments Dining Room, 3100 St. Paul St., Baltimore, Md. The speaker was Dr. Henry C. Freimuth, toxicologist, Office of the Chief Medical Examiner, State of Maryland; instructor in chemistry at Loyola College, and assistant professor of legal medicine at the University of Maryland Medical

School. He spoke on "Chemistry and Sudden Death," illustrating his talk with color slides. The cases selected were taken from the files of the Medical Examiner's Office and showed how the work of chemists revealed the true cause of the deaths in question.

Louisiana Chapter

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Vice Chairman, Dr. W. R. de Monsabert
Secretary-Treasurer, Mack F. Stansbury
Southern Regional Research Laboratory
1100 Robert E. Lee Blvd., New Orleans 19, La.
Representative to National Council,
Harold A. Levey

Technical Man in the Industry

The Louisiana Chapter met March 21st to hear Dr. V. A. Kalichevsky, F.A.I.C., consulting chemical engineer, speak on "Technical Man in the Industry." Dr. Kalichevsky is an authority on catalytic cracking, lubricating oils, asphalt, and greases. He was formerly associated with the Union Oil Co. of California, Standard Oil and Development Co., N.J., and Socony Vacuum Oil Co. He was born in Tiflis, Russia, but became a citizen of the U.S. in 1928. He received the B.S. degree in chemical engineering from California Institute of Technology in 1924. Before coming to this country, he served as assistant Russian military attache to Denmark, 1917-19; with the Office of Royal Roumanian Mission, Vladivostok, Siberia, and Tokyo, 1920-21, and as manager of topography department, Chukotsk Peninsula Mining Corporation, Japan, 1921. (Dr. Kalichevsky's paper will be published in a later issue of THE CHEMIST.)

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Honored: Dr. Vladimir L. Shipp, F.A.I.C., retiring assistant director of Technical Service Laboratories, Socony Mobil Oil Co., New York, N.Y., at a testimonial dinner given by his colleagues. He was presented with a scroll for Meritorious Service and a set of the *Encyclopedia of Chemical Technology,* (Kirk-Othmer) in recognition of twenty-six years of service. Dr. Shipp will continue working as an independent petroleum and asphalt consultant, with offices at 123 E. 37th St., New York 16, N.Y.

Sixteen Conferences: Scheduled for 1957 by Illinois Institute of Technology and its affiliate, Armour Research Foundation. For information, write to Raymond D. Meade, Conference Coordinator, Illinois Institute of Technology, 3300 S. Federal St., Chicago 16, Ill.

Announced: By Dr. Bernard L. Oser, F.A.I.C., director of Food Research Laboratories, 48-14 33rd St., Long Island City 1, N.Y., the opening of a branch office at 9331 Venice Boulevard, Culver City, Calif., headed by Dr. B. H. Ershoff, for nutritional, toxicological and pharmacological investigations.

Appointed: Dr. Kenneth W. Newman, F.A.I.C., as chief process engineer of Turco Products, Inc., 6135 So. Central Ave., Los Angeles, Calif. He was formerly supervisor of the research division.

Opportunities

Doris Eager, M.A.I.C.

Positions Available

Assistant & Associate Professors of Chemistry. Long Beach State College. Primarily in the field of general organic & Physical chemistry. Ph.D. required. Starting salary for academic year $6,000 to $7,000, depending on experience. Write P. Victor Peterson, President, Long Beach State College, 6101 East 7th St., Long Beach 4, California.

Chemist. Major in organic. Experience not necessary but one or two years acceptable. Metropolitan N.Y. Salary open. Box 71, THE CHEMIST.

Chemist. Several years' experience in metal cleaning and surface preparation. Midwest. Salary open. Box 73, THE CHEMIST.

Chemical Administrator

Executive to manage small growing organic chemical manufacturing company. Chemical or chemical engineering background with interest and ability in all phases of business activity — research, development, production, sales, and business promotion. Younger man with potential and some experience or mature man with wider experience will be considered. Box 75, THE CHEMIST.

Chemists Available

Creative chemist with 19 years experience in chemical and food industries. Patents and publications. Desires challenging position in an executive, administrative, or research and development capacity. Box 70, THE CHEMIST.

Chemical Sales: Young chemist, 30, blue chip experience in sales, promotion, publicity; looking for responsible position with growth potential. Broad knowledge of chemical industry, many contacts. Box 72, THE CHEMIST.

Ph.D., organic chemistry, 24, desires position in field of organic synthesis or product development. Several publications, member of two honor societies. Available in fall. Location, New York City. Box 74, THE CHEMIST.

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For Your Library

High Temperature Technology

Edited by I. E. Campbell. Sponsored by the Electrochemical Society. John Wiley & Sons. 1956. 526 *pp.* $15.00.

At the conclusion of a meeting of the Electrochemical Society, 1951, some members pointed out the need for a monograph summarizing recent developments in high-temperature technology, because metal engineers, metallurgists, ceramists, and chemists are now engaged in extensive research to develop new materials of construction for use at very high temperatures. This book results from that demand and includes the work of 35 outstanding authorities in the field.

The editor-in-chief, I. E. Campbell, research chemist at the Battelle Memorial Institute, has, himself, published numerous papers on subjects related to extractive metallurgy, refractories, coatings, and inorganic and physical chemistry.

After a general introduction to high-temperature refractory materials, their fabrication, evaluation, and application to load-bearing structural members, the

book includes chapters on the various metals, their oxides, carbides, borides, silicides, nitrides, sulfides, cermets, etc. Part III discusses methods of producing refractory materials. Part IV deals with measurements.

Illustrations, diagrams, tables, subject and author indices add to the value of this book which is a "must" for any scientist interested in any of the many applications of refractory materials.

—Dr. Frederick A. Hessel, F.A.I.C.

Annotated Bibliography on the Use of Organolithium Compounds In Organic Synthesis

Supplement No. 3, Jan. 1954. Free on request from the Lithium Corporation of America, Rand Tower, Minneapolis 2, Minn.

Practical Laboratory Chemistry —a Manual for the Beginners

By Horace G. Deming. John Wiley & Sons, Inc. 209 pp. $3.50

A laboratory handbook and notebook, well developed for practical use.

Chemical Books Abroad

Dr. Rudolph Seiden, F.A.I.C.

Verlag Volk und Gesundheit, Berlin C2: *Analyse fertiger Arzneimittelformen*, by J. M. Perlman and B. A. Brodski; 2nd ed., 532 pp. (58 ill.); DM 26,—An outstanding feature of this laboratory workbook (translated from the Russian) is the presentation of tested methods for the systematic investigation of pharmaceutical preparations of unknown composition. It also gives directions for the qualitative and quantitative determination of the more important medicinally used substances and contains many helpful tables as well as numerous laboratory experiments.

Wissenschaftliche Verlagsgesellschaft, Stuttgart: *Gehhes Codex, Nachtragsband II*, by G. Otto; 1956, 305 pp.—This well-known index of pharmaceutical specialties—with information as to composition, indication, and manufacturer—was reviewed in THE CHEMIST in the September, 1954, issue, and its first supplement in October 1955. The 2nd supplement lists hundreds of new preparations marketed in Germany since 1954. It includes also 24 pp. of name changes.

Safari-Verlag Berlin-Wilmersdorf: *Die Weltwirtschaft und ihre Rohstoffe*, by H. Guttmann; 1956, 532 pp.; DM 19.90—It is always a pleasure to announce the skillfully edited and artfully printed books of the enterprising Safari publishing company. The latest volume deals brilliantly with a seemingly dry subject: the complicated structure and laws of the world's economy. It emphasizes, with the help of many statistical data, the availability of the raw materials which are so important for industrial and agricultural production. Outstanding are the 24 color plates, 113 photos, 24 maps, 172 tables and 44 graphs supplementing the text.

Urban and Schwarzenberg, Munich: *Ullmanns Encyklopaedie der technischen Chemie, Vol VI*, by W. Foerst; 3rd ed., 835 pp.; DM 108,—It is with great regret, that this weighty volume was received so late that it has to be announced more than 1½ years after Vol. V was reviewed in THE CHEMIST (August 1955). It is also regretted that the limited space available in this column permits us to

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record here not more than the (translated) titles of the masterly treatises written by 46 experts and arranged in alphabetical order between the German words Dimethylaether and Extraktion; namely: dimethyl sulfate; dioxane; diphenyl oxide; dithiocarbamic acid; drugs (70 pp.); fertilizers (88 pp.); rare gases (41 pp.); precious stones (33 pp.); inclusion compounds; iron (147 pp.); iron carbonyl; iron compounds; electrolysis (48 pp.); electron exchanger; electrothermics; enamel (22 pp.); emulsions (16 pp.); rare earths (32 pp.); natural gases and petroleum (213 pp.); vinegar (17 pp.); acetic acid (26 pp.); acetic anhydride and explosives (12 pp.).

Editio Cantor, Aulendorf i.W.: *Aureomycin und Achromycin, (Tetracyclin)* by H. Vonderbank; 1956, 662 pp.; DM 36.—An exhaustive monograph on these 2 broad-spectrum antibiotics based on over 4000 medical-biological publications from all over the world. It is addressed to the physician and to researchers interested in knowing the chemical actions and indications for use of these wonder drugs and their history, production, chemistry, determination, efficiency, toxicology, and pharmacology.

Birkhaeuser Verlag, Basel: *15th International Congress of Pure and Applied Chemistry;* 1956, 240 pp.; SFr. 32.—The 14 main congress and section lectures held at Lisbon, September 8-16, 1956, are compiled in this volume in their original languages—5 in English, 5 in French, and 4 in German. The subjects concern mostly new approaches to analytical problems; one lecture is on atomic energy, another on organic complex formers.

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Conference: To be held August 20-22 by Northwestern University on Liquid Scintillation Counting, at the Technological Institute, Evanston, Ill. Topics on the theory and application of liquid scintillators are covered by invited papers.

Appointed: Elbert C. Weaver, F.A.I.C., instructor in chemistry at Phillips Academy, Andover, Mass., as senior education advisor for the Manufacturing Chemists' Association. Dr. James K. Hunt has been named education advisor. Mr. Weaver will serve on a part-time basis through an agreement with Phillips Academy, where he has been a teacher since 1943.

New Position: For Mildred Hunt, F.A.I.C., who has joined the American Lithium Institute, Inc., Princeton, N.J., as research librarian. She was formerly on the library staff of Food Machinery & Chemical Corp., and before that in the information center of the Sugar Research Foundation.

Announced: By the Gordon Research Conferences of the AAAS, New London, New Hampshire, the appointment of Dr. Robert W. Schiessler, F.A.I.C., and Raymond Stevens, Hon. AIC, as chairman of the Board of Trustees and chairman-elect of the Board of Trustees, respectively. Dr. Schiessler is technical director of the Research Division, Socony Mobil Labs., Paulsboro, N.J. Mr. Stevens is president of Arthur D. Little, Inc., Cambridge, Mass.

Established: The Arthur D. Little Research Institute, at Inveresk near Edinburgh, Scotland to undertake fundamental scientific investigations for clients. The Rt. Hon. Lord Bilsland, K.T., president of the Scottish Council, is chairman of the Board. Relations between the new Institute and Arthur D. Little, Inc., Cambridge, Mass., will be coordinated from Cambridge by Dr. L. W. Bass, F.A.I.C. Dr. F. N. Woodward will direct operations at Inveresk.

Announced: By Ralph Wechsler, F.A.I.C., president of Nopco Chemical Co., Harrison, N.J., the election of George H. Faux as treasurer; Alfred O. Brookes, as secretary; Julius J. Denzler as assistant secretary, and Robert M. Urich as assistant treasurer.

Elected: John H. Nair, AIC President, as an honorary member of the Chemical, Metallurgical & Mining Society of South Africa.

Symposium: On Gas Chromatography, announced by the Analysis Instrumentation Committee of the Instrument Society of America, to be held at the Kellogg Center for Continuing Education, East Lansing, Mich., Aug 28-30, 1957. Each session will consist of a one-hour paper, presented by a U.S. or European authority, followed by related, short, contributed papers, presenting the most recent developments in gas chromatography. For information, write the Society at 313 6th Ave., Pittsburgh, Pa.

Resigned: Dr. James B. Conant, Hon. AIC, as ambassador to West Germany. In a press interview, Dr. Conant stated that he intends to re-enter the educational field and concern himself with the "vital high school problem." He plans to live in New York City.

Appointed: Dr. Edmund Field, F.A.I.C., as senior research associate at the Whiting, Indiana, laboratories of Standard Oil Company (Indiana). Dr. Field will coordinate work on olefin polymerization related to high polymers.

Completed: The new phosphoric acid plant of U.S. Industrial Chemicals Co. Div., of National Distillers Products Corp. The new plant, located at Tuscola, Ill., as announced by Dr. R. E. Hulse, F.A.I.C., vice president of National Distillers, has a production capacity of 30,000 tons per year.

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